



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/556,726

04/28/2006

Keiichi Ohata

040373-0364

4998

22428 7590 05/09/2008
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

LEE, BENNY T

ART UNIT

PAPER NUMBER

2817

MAIL DATE

DELIVERY MODE

05/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/556,726	Applicant(s) OHATA ET AL.	
	Examiner Benny Lee	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7; 2; 8,10-14; 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>14 November 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

The disclosure is objected to because of the following informalities: Page 3, line 1, note that “7 4” should be correctly rewritten as --74--. Page 4, in the heading, note that “Disclosure” should be rewritten as --Summary-- for consistency with PTO guidelines. Page 9, line 17 and page 12, line 9, note that --(Fig. 3A)-- should be inserted after “port 3” & “line 9b”, respectively for consistency with the labeling in that drawing figure. Page 10, line 1, note that --in Fig. 3B-- should follow “10d” for consistency with the labeling in that drawing figure; line 21, note that --as shown in Fig. 3A-- should be inserted after “6 and 7” for consistency with the labeling in that drawing figure; line 25, note that --as shown in Fig. 4B-- should be inserted after “embodiment” since the reference labels in the subsequent description pertain to that drawing figure. Page 11, line 1, note that it is unclear whether the “not shown” designation for the bias “circuits” is appropriate and needs clarification (i.e. note that Fig. 4B appears to show a bias circuit Vc); line 6, note that the reference to “FIGs. 4A and 4B” appears that it should reference --FIG. 4B-- only since the subsequent description appears to refer to that drawing figure rather than both drawing figures. Page 12, lines 4, 5, note that “a bending but perfect waveguide tube” is vague in meaning and needs clarification. Page 12, line 9, note that --(Fig. 3B)-- should be inserted after “10b” for consistency with the labeling in that drawing figure. Note that reference label “Vc” appearing in Figs. 4B & 7 need a corresponding description in the specification description of those drawing figures. Similarly, note that reference label “5” appearing in Figs. 6 & 7 need a corresponding description in the specification description of those drawing figures. Appropriate correction is required.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the waveguide tubes formed in a

Art Unit: 2817

dielectric board including conductive layers & vias, such as recited in claim 4, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 4-7; 8, 10-14; 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 4, 5, 11, 12, note that “said waveguide tubes” (i.e. plural) does not appear consistent with the earlier recitation of the singular “waveguide tube”. Clarification is needed.

In claim 5, note that the recitation of “a waveguide that form said branch waveguides” does not appear consistent with the earlier recitation of “a plurality of branch waveguides”.

Clarification is needed.

In claim 7, line 3, note that it is unclear how “waveguide tubes” as recited herein relates to the earlier recitation of “waveguide tubes” (e.g. the same waveguide tubes, different waveguide tubes, etc). Clarification is needed.

Art Unit: 2817

In claims 8, 9, note that it is unclear how “a feeder waveguide” and “a feedside waveguide” relate to each other (i.e. one in the same waveguide, different waveguides, etc).

Clarification is needed.

In claim 12, note that “a waveguides” appears to be of inconsistent tense and needs clarification.

The following claims have been found to be objectionable for reasons set forth below:

In claims 3, 4, 6,7, 10, 11, 13, 14, note that “formed from” should be rephrased as -- comprised of-- for an appropriate characterization.

In claims 4, 11, line 3 in each claim, note that “formed” should be rewritten as -- provided-- for an appropriate characterization.

In claims 5, 12, line 3 in each claim, note that “forming” should be rewritten as -- providing-- for an appropriate characterization.

In claim 7, line 3; claim 12, line 2; claim 13, line 2; claim 14, line 3: note that “form” should be rewritten as --provide-- for an appropriate characterization.

In claims 8, 9, line 1 of each claim, note that “antennas each having” should be rephrased as --antennas, each antenna having-- for an appropriate characterization; line 3 of each claim, note that --plurality of-- should be inserted between “said” & “antennas” for an appropriate characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Vlietstra.

Vlietstra discloses a feeder waveguide (e.g. for radar systems, e.g. At column 1, line 32) comprising a plurality of waveguides (e.g. 11, 12, 13) arranged with a waveguide switch (e.g. 10) at a junction to define a feed waveguide and a plurality of branch waveguides at the junction. Note that one of the waveguides (11, 12, 13) can arbitrarily be the feed waveguide while the remaining ones of waveguides (11, 12, 13) inherently constitute the branch waveguides. Note that the waveguide switch (10) is physically located at the junction or “starting position” between the feed waveguide and branch waveguides and as is evident from Fig. 2, the waveguide switch can selectively cause electromagnetic energy to flow from the feed waveguide to one of the branch waveguides depending on the position of the conductive vane define by conductive plates (22, 23) in the waveguide switch, which cuts off the other branch waveguide from receiving the electromagnetic energy

Claim 2 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hershberger.

Hershberger (e.g. Fig. 1) discloses a waveguide system comprising a feeder waveguide (e.g. first waveguide 2) which branches into branch waveguides (3, 4) at a junction or “starting point”. Note that the branch waveguides are connected or terminated relative to respective load devices (e.g. antennas at column 2, line 44). Moreover, note that each branch waveguide (3, 4) includes a corresponding slot (e.g. 7, 8) through which a vane plate (5) can pass into the waveguide. In operation, when the vane plate (5) passes into the corresponding waveguide, such vane plate effectively blocks the passage of electromagnetic energy from the transmitter (1) from reaching the corresponding antenna load to thereby prevent that antenna load from radiating. Conversely, the other branch waveguide is not blocked by the vane (5) and electromagnetic

Art Unit: 2817

energy is unimpeded in propagating to the corresponding selected antenna load. Note that since the vane (5) is rotatable about shaft (6), then either one of branch waveguides (3, 4) may be selectively blocked by the vane (5). Moreover, note that the location of the slots (7, 8) and the vane (5) is a distance which is an integral multiple of one-half wavelength from the junction or “starting point” (e.g. see column 2, lines 49-52) as to permit the high impedance caused by being reflected off of the vane to appear as a high impedance at the junction (e.g. see column 1, lines 40-43).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5, 7; 8, 10, 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al in view of Vlietstra.

Frank et al (e.g. Figs. 3a-3c) discloses a feeder waveguide comprises a distribution module with a waveguide distribution network (34) of the waveguide type. Note that the waveguide distribution network includes an input port (35), a plurality of branched output ports (e.g. 30) and a plurality of branched waveguide tubes connected to the input port at a junction

(e.g. see Fig. 3b). Furthermore, as evident from Figs. 4a, 4b, such a waveguide distribution network has output ports (30) thereof connected to a sectoral antenna (e.g. 40). However, Frank et al differs from the claimed invention in that it lacks a blocking means located at the junction.

Vlietstra provides an exemplary teaching of locating a waveguide switch at the junction between a feeder waveguide and branch waveguides to provide selective flow of electromagnetic energy from a feeder waveguide to selected ones of the branch waveguide for use in a radar system.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added the waveguide switch to the junction in the waveguide distribution network of Frank et al, such as taught by Vlietstra. Such a modification would have been considered obvious since such a configuration would have imparted to the Frank et al antenna system the capability of operating in a radar system (i.e. the waveguide switch at the junction permits operation in a radar system), thereby suggesting the obviousness of the modification. Note that as an obvious consequence of the modification, the modified waveguide switch of the obviousness combination would necessarily have included the selectively movable vane plates as taught by Vlietstra as means for blocking the undesired branch waveguide.

Claims 2; 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al in view of Hershberger.

As described in the preceding rejection, Frank et al discloses the claimed invention except for the waveguide switching arrangement being located in the branch waveguides at a distance of an integral multiple of one half wavelength from the junction of the waveguide distribution network.

As described in an above rejection, Hershberger discloses an exemplary waveguide branching arrangement for a plural antenna system. In particular, note the placement of the waveguide switching arrangement in the branch waveguide at a distance which is an integral multiple of one half wavelength from the junction of the branching arrangement.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have added the waveguide switch to the junction in the waveguide distribution network of Frank et al, such as taught by Hershberger. Such a modification would have been considered obvious since it would have imparted to the Frank et al antenna system the capability of selectively switching the plural antennas of the antenna system, thereby suggesting the obviousness of such a modification. Note that as an obvious consequence of the modification, the modified waveguide switching arrangement of the obviousness combination would necessarily have included the selectively movable vane located at a distance of an integral multiple of one half wavelength from the junction as taught by Hershberger, thereby suggesting the obviousness of such a modification.

Claims 4; 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claims 1, 8, respectively above, and further in view of Fathy et al.

Note that the above obviousness combination discloses the claimed invention except for the waveguide distribution network being waveguides tubes comprised of metal layers and conductive vias being disposed on a circuit board.

Fathy et al (e.g. Figs. 1, 2) discloses an antenna array (100), which includes a branch waveguide tube (200) having top and bottom metal walls (202, 204) interconnected by

conductive vias (216) all of which are embedded in one or more ceramic layer (see column 6, lines 60-62), which inherently define a circuit board.

Accordingly, it would have been obvious in view of the references, taken a whole, to have alternatively realized the waveguide distribution network of the above obviousness combination as a branching waveguide tube distribution network formed on a ceramic circuit board as taught by Fathy et al. Such a modification would have been considered an obvious substitution of art recognized equivalent waveguide distribution systems (i.e. the branching network in Fathy et al functions equivalently to distribute electromagnetic energy in substantially the same manner as in the combination), thereby suggesting the obviousness of such a modification.

Claims 6; 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claims 5, 12, respectively above, and further in view of Berman et al.

The above obviousness combination discloses the claimed invention except for the waveguide switching arrangement being comprised of a diode responsive to forward and reverse bias voltages.

Berman et al provides an exemplary teaching of a waveguide switching arrangement which includes among the switching configurations, a mechanical switching configuration (e.g. Fig. 9) and an electrical switching arrangement (e.g. a diode as in Fig. 10) which functionally can block electromagnetic energy from propagating in a respective waveguide.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have further modified the above obviousness combination to have realized the switching configuration of the combination as a diode rather than the movable vanes. Such a further

Art Unit: 2817

modification would have been considered an obvious substitution of art recognized equivalent switching configurations, especially since Berman et al recognizes such a functional equivalents between a diode switching configuration and a mechanical switching configuration (e.g. a movable vane) in providing the required reflecting or blocking of electromagnetic energy, thereby suggesting the obviousness of such a modification. Moreover, note that as an obvious consequence of the modification with a switching diode, such diode must necessarily be responsive to forward and reverse biased to control the desired switching state, as would have been known to those of ordinary skill in the art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rammos et al discloses a waveguide antenna system fed by a waveguide distribution network..

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

**/BENNY LEE/
PRIMARY EXAMINER
ART UNIT 2817**

B. Lee